

536 992
10/536 992

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau(43) International Publication Date
1 July 2004 (01.07.2004)

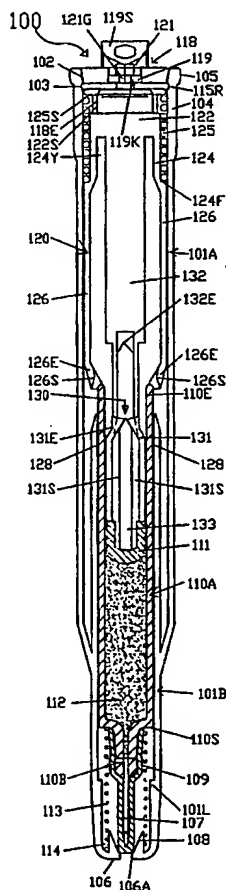
PCT

(10) International Publication Number
WO 2004/054644 A1

- (51) International Patent Classification⁷: A61M 5/20, 5/24, 5/32
- (21) International Application Number: PCT/GB2003/005424
- (22) International Filing Date: 12 December 2003 (12.12.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 0229345.4 17 December 2002 (17.12.2002) GB
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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

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(54) Title: HOLLOW NEEDLE APPLICATORS



(57) Abstract: A fluid filled cartridge (110) having a fixed needle (107) and a piston assembly (111, 131, 133) for expression of its contents (112) is mounted inside an applicator (101). In order to extend the needle (107) from the body (101) prior to cartridge contents expression and without premature leakage of fluid therefrom, an actuator (120), which may be operated by spring (125) or manually, is mounted in the body to drive the cartridge forwards. This is accomplished by co-operating driving (126) and driven (110E) parts of the actuator and the cartridge (or any carrier it may have) which are decoupled by release formations, e.g. triggering extensions (128), in the applicator body (101) after the cartridge (110) has been moved sufficiently to extend the needle (107). Specifically, the driving part (126E) may be deflected outwardly by the triggering extension (128). The applicator (100) may also include provision, including, for example, forwardly mounted spring (113), for automatic needle retraction after cartridge contents expression. This may be accomplished by further driving extensions (132) on the actuator (120) being released, e.g. by the action of trigger rod (133), from their drive coupling with parts (131E) of the piston rod, e.g. by outward deflection of the latter, after the piston (111) has been depressed a sufficient distance to express the contents (112). A separate inventive feature is the deformability of the piston (111) so that force transmission to the trigger means (133) to initiate needle retraction only occurs upon full content expression when the piston has "bottomed out" within the cartridge (110).

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WO 2004/054644 A1